WHAT IS CLAIMED IS:

1.   A method for retrieving records in a hierarchical set of the records having a plurality of hierarchical levels and a plurality of hierarchical depths, each of the records having a tag that is unique within the hierarchical set of the records, the method comprising:

identifying one of the records in the hierarchical set of the records;

modifying the tag, thereby producing a key;

indexing the hierarchical set of the records only once, thereby selecting one or more of the records within the hierarchical set of the records, wherein indexing the hierarchical set of the records only once comprises applying the key to the hierarchical set of the records; and

retrieving the selected records.

2.   The method of claim 1, wherein applying comprises:

selecting those of the records in the hierarchical set of the records having a tag that matches the key.

3.   The method of claim 2, wherein identifying one of the records comprises:

receiving a selection of the one of the records from a user; and

receiving a command from the user; and wherein

modifying the tag is based on the command from the user.

4.   The method of claim 3, wherein each of the records has one or more fields, further comprising:

displaying a field of each of the retrieved records on a display, wherein the position of each of the fields on the display represents the hierarchical depth and hierarchical level of the corresponding one of the retrieved records.

5.   The method of claim 2, wherein:

each tag is a number having a plurality of digits;

the position of each of the digits represents one of the hierarchical depths;

the value of each of the digits represents one of the hierarchical levels; and

modifying the tag comprises:

selecting at least one of the digits according to the command from the user; and

changing the value of the selected digits according to the command from the user.

6.   The method of claim 2, wherein:

each tag is a number having a plurality of digits;

the position of each of the digits represents one of the hierarchical depths;

the value of each of the digits represents one of the hierarchical levels;

the command from the user requests retrieving the children of the identified record; and

modifying the tag comprises:

selecting the digit corresponding to the hierarchical depth of the identified record; and

setting the value of each digit corresponding to a hierarchical depth below the hierarchical depth corresponding to the selected digit to a wildcard value.

7.   The method of claim 2, wherein:

each tag is a number having a plurality of digits;

the position of each of the digits represents one of the hierarchical depths;

the value of each of the digits represents one of the hierarchical levels;

the command from the user requests retrieving the parent of the identified record; and

modifying the tag comprises:

selecting the digit corresponding to the hierarchical depth of the identified record; and

setting the value of the selected digit to a null value.

8.   The method of claim 2, wherein each of the records represents one of a message and a folder.

9.   A method for adding a new record to a hierarchical set of records having a plurality of hierarchical levels and a plurality of hierarchical depths, each of the records in the hierarchical set of records having a tag that is unique within the hierarchical set of records, the method comprising:

5   identifying one of the records in the hierarchical set of records as the parent of the new record;

modifying the tag, thereby producing a key;

adding the key to the new record; and

indexing the hierarchical set of records only once, thereby adding the new record to

10   the hierarchical set of records, wherein indexing the hierarchical set of records only once comprises applying the key to the hierarchical set of records.

10.   The method of claim 9, wherein identifying one of the records comprises:

receiving a selection of the one of the records from a user.

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11.   The method of claim 10, wherein:

each tag is a number having a plurality of digits;

the position of each of the digits represents one of the hierarchical depths;

the value of each of the digits represents one of the hierarchical levels;

20   the identified record represents a message;

identifying one of the records further comprises receiving a command from the user that requests replying to the message; and

modifying the tag comprises:

selecting the digit corresponding to the hierarchical depth immediately below

25   the hierarchical depth of the identified record; and

incrementing the value of the selected digit.

12.   The method of claim 9, wherein applying comprises:

selecting those of the records in the hierarchical set of the records having a tag that

30   matches the key.

13. The method of claim 9, wherein:

each tag includes a plurality of digits;

the position of each of the digits represents one of the hierarchical depths; and

the value of each of the digits represents one of the hierarchical levels.

14. A method for selecting records in a hierarchical set of the records having a plurality of hierarchical levels and a plurality of hierarchical depths, each of the records having a tag that is unique within the hierarchical set of the records, the method comprising:

identifying one of the records in the hierarchical set of the records;

modifying the tag; and

indexing the hierarchical set of the records only once, thereby selecting one or more of the records within the hierarchical set of the records, wherein indexing the hierarchical set of the records only once comprises applying the modified tag to the hierarchical set of the record.

15. The method of claim 14, wherein:

each tag includes a plurality of digits;

the position of each of the digits represents one of the hierarchical depths; and

the value of each of the digits represents one of the hierarchical levels.

16. The method of claim 14, wherein applying comprises:

selecting those of the records in the hierarchical set of the records having a tag that matches the key.

17. At least one computer programmed to execute a process for retrieving records in a hierarchical set of the records having a plurality of hierarchical levels and a plurality of hierarchical depths, each of the records having a tag that is unique within the hierarchical set of the records, the process comprising:

identifying one of the records in the hierarchical set of the records;

modifying the tag, thereby producing a key;

indexing the hierarchical set of the records only once, thereby selecting one or more of the records within the hierarchical set of the records, wherein indexing the hierarchical set of the records only once comprises applying the key to the hierarchical set of the records; and

retrieving the selected records.

18.   The computer of claim 17, wherein applying comprises:

selecting those of the records in the hierarchical set of the records having a tag that matches the key.

19.   The computer of claim 18, wherein identifying one of the records comprises:

receiving a selection of the one of the records from a user; and

receiving a command from the user; and wherein

modifying the tag is based on the command from the user.

20.   The computer of claim 19, wherein each of the records has one or more fields, and the process further comprises:

displaying a field of each of the retrieved records on a display, wherein the position of each of the fields on the display represents the hierarchical depth and hierarchical level of the corresponding one of the retrieved records.

21.   The computer of claim 18, wherein:

each tag is a number having a plurality of digits;

the position of each of the digits represents one of the hierarchical depths;

the value of each of the digits represents one of the hierarchical levels; and

modifying the tag comprises:

selecting at least one of the digits according to the command from the user; and

changing the value of the selected digits according to the command from the user.

22.   The computer of claim 18, wherein:

each tag is a number having a plurality of digits;

the position of each of the digits represents one of the hierarchical depths;

the value of each of the digits represents one of the hierarchical levels;

the command from the user requests retrieving the children of the identified record;

5   and

modifying the tag comprises:

selecting the digit corresponding to the hierarchical depth of the identified

record; and

setting the value of each digit corresponding to a hierarchical depth below the

10   hierarchical depth corresponding to the selected digit to a wildcard value.

23.   The computer of claim 18, wherein:

each tag is a number having a plurality of digits;

the position of each of the digits represents one of the hierarchical depths;

15   the value of each of the digits represents one of the hierarchical levels;

the command from the user requests retrieving the parent of the identified record; and

modifying the tag comprises:

selecting the digit corresponding to the hierarchical depth of the identified

record; and

20   setting the value of the selected digit to a null value.

24.   The computer of claim 18, wherein each of the records represents one of a

message and a folder.

25.   At least one computer programmed to execute a process for adding a new

record to a hierarchical set of records having a plurality of hierarchical levels and a plurality

of hierarchical depths, each of the records in the hierarchical set of records having a tag that

is unique within the hierarchical set of records, the process comprising:

identifying one of the records in the hierarchical set of records as the parent of the

30   new record;

modifying the tag, thereby producing a key;

adding the key to the new record; and

indexing the hierarchical set of records only once, thereby adding the new record to the hierarchical set of records, wherein indexing the hierarchical set of records only once comprises applying the key to the hierarchical set of records.

26.   The computer of claim 25, wherein identifying one of the records comprises: receiving a selection of the one of the records from a user.

27.   The computer of claim 26, wherein:

each tag is a number having a plurality of digits;

the position of each of the digits represents one of the hierarchical depths;

the value of each of the digits represents one of the hierarchical levels;

the identified record represents a message;

identifying one of the records further comprises receiving a command from the user that requests replying to the message; and

modifying the tag comprises:

selecting the digit corresponding to the hierarchical depth immediately below the hierarchical depth of the identified record; and

incrementing the value of the selected digit.

28.   The computer of claim 25, wherein applying comprises:

selecting those of the records in the hierarchical set of the records having a tag that matches the key.

29.   The computer of claim 25, wherein:

each tag includes a plurality of digits;

the position of each of the digits represents one of the hierarchical depths; and

the value of each of the digits represents one of the hierarchical levels.

30.   At least one computer programmed to execute a process for selecting records in a hierarchical set of the records having a plurality of hierarchical levels and a plurality of

hierarchical depths, each of the records having a tag that is unique within the hierarchical set of the records, the process comprising:

    identifying one of the records in the hierarchical set of the records;

    modifying the tag; and

    indexing the hierarchical set of the records only once, thereby selecting one or more of the records within the hierarchical set of the records, wherein indexing the hierarchical set of the records only once comprises applying the modified tag to the hierarchical set of the record.

31.   The computer of claim 30, wherein:

each tag includes a plurality of digits;

the position of each of the digits represents one of the hierarchical depths; and

the value of each of the digits represents one of the hierarchical levels.

32.   The computer of claim 30, wherein applying comprises:

    selecting those of the records in the hierarchical set of the records having a tag that matches the key.

33.   An apparatus for retrieving records in a hierarchical set of the records having a plurality of hierarchical levels and a plurality of hierarchical depths, each of the records having a tag that is unique within the hierarchical set of the records, the apparatus comprising:

    means for identifying one of the records in the hierarchical set of the records;

    means for modifying the tag, thereby producing a key;

    means for indexing the hierarchical set of the records only once, thereby selecting one or more of the records within the hierarchical set of the records, wherein indexing the hierarchical set of the records only once comprises applying the key to the hierarchical set of the records; and

    means for retrieving the selected records.

34.   The apparatus of claim 33, wherein means for applying comprises:

means for selecting those of the records in the hierarchical set of the records having a tag that matches the key.

35.   The apparatus of claim 34, wherein means for identifying one of the records comprises:

means for receiving a selection of the one of the records from a user; and

means for receiving a command from the user; and wherein

modifying the tag is based on the command from the user.

36.   The apparatus of claim 35, wherein each of the records has one or more fields, further comprising:

means for displaying a field of each of the retrieved records on a display, wherein the position of each of the fields on the display represents the hierarchical depth and hierarchical level of the corresponding one of the retrieved records.

37.   The apparatus of claim 34, wherein:

each tag is a number having a plurality of digits;

the position of each of the digits represents one of the hierarchical depths;

the value of each of the digits represents one of the hierarchical levels; and

means for modifying the tag comprises:

means for selecting at least one of the digits according to the command from the user; and

means for changing the value of the selected digits according to the command from the user.

38.   The apparatus of claim 34, wherein:

each tag is a number having a plurality of digits;

the position of each of the digits represents one of the hierarchical depths;

the value of each of the digits represents one of the hierarchical levels;

the command from the user requests retrieving the children of the identified record; and

means for modifying the tag comprises:

means for selecting the digit corresponding to the hierarchical depth of the identified record; and

means for setting the value of each digit corresponding to a hierarchical depth

5   below the hierarchical depth corresponding to the selected digit to a wildcard value.

39.   The apparatus of claim 34, wherein:

each tag is a number having a plurality of digits;

the position of each of the digits represents one of the hierarchical depths;

10   the value of each of the digits represents one of the hierarchical levels;

the command from the user requests retrieving the parent of the identified record; and

means for modifying the tag comprises:

means for selecting the digit corresponding to the hierarchical depth of the identified record; and

15   means for setting the value of the selected digit to a null value.

40.   The apparatus of claim 34, wherein each of the records represents one of a message and a folder.

20   41.   An apparatus for adding a new record to a hierarchical set of records having a plurality of hierarchical levels and a plurality of hierarchical depths, each of the records in the hierarchical set of records having a tag that is unique within the hierarchical set of records, the apparatus comprising:

means for identifying one of the records in the hierarchical set of records as the parent

25   of the new record;

means for modifying the tag, thereby producing a key;

means for adding the key to the new record; and

means for indexing the hierarchical set of records only once, thereby adding the new record to the hierarchical set of records, wherein means for indexing the hierarchical set of

30   records only once comprises means for applying the key to the hierarchical set of records.

42.   The apparatus of claim 41, wherein means for identifying one of the records comprises:

means for receiving a selection of the one of the records from a user.

43.   The apparatus of claim 42, wherein:

each tag is a number having a plurality of digits;

the position of each of the digits represents one of the hierarchical depths;

the value of each of the digits represents one of the hierarchical levels;

the identified record represents a message;

means for identifying one of the records further comprises means for receiving a command from the user that requests replying to the message; and

means for modifying the tag comprises:

means for selecting the digit corresponding to the hierarchical depth immediately below the hierarchical depth of the identified record; and

means for incrementing the value of the selected digit.

44.   The apparatus of claim 41, wherein means for applying comprises:

means for selecting those of the records in the hierarchical set of the records having a tag that matches the key.

45.   The apparatus of claim 41, wherein:

each tag includes a plurality of digits;

the position of each of the digits represents one of the hierarchical depths; and

the value of each of the digits represents one of the hierarchical levels.

46.   An apparatus for selecting records in a hierarchical set of the records having a plurality of hierarchical levels and a plurality of hierarchical depths, each of the records having a tag that is unique within the hierarchical set of the records, the apparatus comprising:

means for identifying one of the records in the hierarchical set of the records;

means for modifying the tag; and

means for indexing the hierarchical set of the records only once, thereby selecting one or more of the records within the hierarchical set of the records, wherein means for indexing the hierarchical set of the records only once comprises means for applying the modified tag to the hierarchical set of the record.

47. The apparatus of claim 46, wherein:

each tag includes a plurality of digits;

the position of each of the digits represents one of the hierarchical depths; and

the value of each of the digits represents one of the hierarchical levels.

48. The apparatus of claim 46, wherein means for applying comprises:

means for selecting those of the records in the hierarchical set of the records having a tag that matches the key.

49. Computer-readable media embodying instructions executable by a computer to perform a method for retrieving records in a hierarchical set of the records having a plurality of hierarchical levels and a plurality of hierarchical depths, each of the records having a tag that is unique within the hierarchical set of the records, the method comprising:

identifying one of the records in the hierarchical set of the records;

modifying the tag, thereby producing a key;

indexing the hierarchical set of the records only once, thereby selecting one or more of the records within the hierarchical set of the records, wherein indexing the hierarchical set of the records only once comprises applying the key to the hierarchical set of the records; and

retrieving the selected records.

50. The media of claim 49, wherein applying comprises:

selecting those of the records in the hierarchical set of the records having a tag that matches the key.

51. The media of claim 50, wherein identifying one of the records comprises:

receiving a selection of the one of the records from a user; and

receiving a command from the user; and wherein

modifying the tag is based on the command from the user.

52.   The media of claim 51, wherein each of the records has one or more fields, the
method further comprising:

displaying a field of each of the retrieved records on a display, wherein the position of
each of the fields on the display represents the hierarchical depth and hierarchical level of the
corresponding one of the retrieved records.

53.   The media of claim 50, wherein:

each tag is a number having a plurality of digits;

the position of each of the digits represents one of the hierarchical depths;

the value of each of the digits represents one of the hierarchical levels; and

modifying the tag comprises:

selecting at least one of the digits according to the command from the user;
and

changing the value of the selected digits according to the command from the
user.

54.   The media of claim 50, wherein:

each tag is a number having a plurality of digits;

the position of each of the digits represents one of the hierarchical depths;

the value of each of the digits represents one of the hierarchical levels;

the command from the user requests retrieving the children of the identified record;
and

modifying the tag comprises:

selecting the digit corresponding to the hierarchical depth of the identified
record; and

setting the value of each digit corresponding to a hierarchical depth below the
hierarchical depth corresponding to the selected digit to a wildcard value.

55.   The media of claim 50, wherein:

each tag is a number having a plurality of digits;

the position of each of the digits represents one of the hierarchical depths;

the value of each of the digits represents one of the hierarchical levels;

the command from the user requests retrieving the parent of the identified record; and

modifying the tag comprises:

      selecting the digit corresponding to the hierarchical depth of the identified record; and

      setting the value of the selected digit to a null value.

56.   The media of claim 50, wherein each of the records represents one of a message and a folder.

57.   Computer-readable media embodying instructions executable by a computer to perform a method for adding a new record to a hierarchical set of records having a plurality of hierarchical levels and a plurality of hierarchical depths, each of the records in the hierarchical set of records having a tag that is unique within the hierarchical set of records, the method comprising:

      identifying one of the records in the hierarchical set of records as the parent of the new record;

      modifying the tag, thereby producing a key;

      adding the key to the new record; and

      indexing the hierarchical set of records only once, thereby adding the new record to the hierarchical set of records, wherein indexing the hierarchical set of records only once comprises applying the key to the hierarchical set of records.

58.   The media of claim 57, wherein identifying one of the records comprises:

receiving a selection of the one of the records from a user.

59.   The media of claim 58, wherein:

each tag is a number having a plurality of digits;

the position of each of the digits represents one of the hierarchical depths;

the value of each of the digits represents one of the hierarchical levels;

the identified record represents a message;

identifying one of the records further comprises receiving a command from the user
that requests replying to the message; and

modifying the tag comprises:

selecting the digit corresponding to the hierarchical depth immediately below
the hierarchical depth of the identified record; and

incrementing the value of the selected digit.

60.   The media of claim 57, wherein applying comprises:

selecting those of the records in the hierarchical set of the records having a tag that
matches the key.

61.   The media of claim 57, wherein:

each tag includes a plurality of digits;

the position of each of the digits represents one of the hierarchical depths; and

the value of each of the digits represents one of the hierarchical levels.

62.   Computer-readable media embodying instructions executable by a computer
to perform a method for selecting records in a hierarchical set of the records having a
plurality of hierarchical levels and a plurality of hierarchical depths, each of the records
having a tag that is unique within the hierarchical set of the records, the method comprising:

identifying one of the records in the hierarchical set of the records;

modifying the tag; and

indexing the hierarchical set of the records only once, thereby selecting one or more
of the records within the hierarchical set of the records, wherein indexing the hierarchical set
of the records only once comprises applying the modified tag to the hierarchical set of the
record.

63.   The media of claim 62, wherein:

each tag includes a plurality of digits;

the position of each of the digits represents one of the hierarchical depths; and

the value of each of the digits represents one of the hierarchical levels.

64.   The media of claim 62, wherein applying comprises:

selecting those of the records in the hierarchical set of the records having a tag that matches the key.

65.   A method of tagging a datum in a hierarchical data set having a plurality of hierarchical levels and a plurality of hierarchical depths, the method comprising:

determining a hierarchical level of the datum;

determining a hierarchical depth of the datum; and

assigning a tag to the datum, comprising:

determining the immediate parent of the datum;

selecting a tag of the immediate parent of the datum, wherein the tag is a number having multiple digits each representing one of the hierarchical depths of the hierarchical data set;

selecting a digit of the selected tag that represents the hierarchical depth of the datum;

assigning a value to the selected digit, the value representing the hierarchical level of the datum.

66.   The method of claim 65, wherein assigning a value to the selected digit comprises:

determining the number of children of the immediate parent of the datum that have already been tagged;

incrementing the number of children to obtain an incremented number; and

setting the value of the selected digit to equal the value of the incremented number.

67.   The method of claim 65, wherein:

each datum represents a message;

the child of a datum represents a reply to the message represented by the datum; and

the parent of a datum represents a message, a reply to which is represented by the datum.

68.   The method of claim 65, wherein:

each datum represents a container;

the child of a datum represents a container within the container represented by the datum; and

the parent of a datum represents a container which contains the container represented by the datum.

69.   At least one computer programmed to execute a process for tagging a datum in a hierarchical data set having a plurality of hierarchical levels and a plurality of hierarchical depths, the process comprising:

determining a hierarchical level of the datum;

determining a hierarchical depth of the datum; and

assigning a tag to the datum, comprising:

determining the immediate parent of the datum;

selecting a tag of the immediate parent of the datum, wherein the tag is a number having multiple digits each representing one of the hierarchical depths of the hierarchical data set;

selecting a digit of the selected tag that represents the hierarchical depth of the datum;

assigning a value to the selected digit, the value representing the hierarchical level of the datum.

70.   The computer of claim 69, wherein assigning a value to the selected digit comprises:

determining the number of children of the immediate parent of the datum that have already been tagged;

incrementing the number of children to obtain an incremented number; and

setting the value of the selected digit to equal the value of the incremented number.

71.   The computer of claim 69, wherein:

each datum represents a message;

the child of a datum represents a reply to the message represented by the datum; and

the parent of a datum represents a message, a reply to which is represented by the datum.

72.   The computer of claim 69, wherein:

each datum represents a container;

the child of a datum represents a container within the container represented by the datum; and

the parent of a datum represents a container which contains the container represented by the datum.

73.   An apparatus for tagging a datum in a hierarchical data set having a plurality of hierarchical levels and a plurality of hierarchical depths, the apparatus comprising:

means for determining a hierarchical level of the datum;

means for determining a hierarchical depth of the datum; and

means for assigning a tag to the datum, comprising:

means for determining the immediate parent of the datum;

means for selecting a tag of the immediate parent of the datum, wherein the tag is a number having multiple digits each representing one of the hierarchical depths of the hierarchical data set;

means for selecting a digit of the selected tag that represents the hierarchical depth of the datum;

means for assigning a value to the selected digit, the value representing the hierarchical level of the datum.

74.   The apparatus of claim 73, wherein means for assigning a value to the selected digit comprises:

means for determining the number of children of the immediate parent of the datum that have already been tagged;

means for incrementing the number of children to obtain an incremented number; and

means for setting the value of the selected digit to equal the value of the incremented

5   number.

75.   The apparatus of claim 73, wherein:

each datum represents a message;

the child of a datum represents a reply to the message represented by the datum; and

10   the parent of a datum represents a message, a reply to which is represented by the datum.

76.   The apparatus of claim 73, wherein:

each datum represents a container;

15   the child of a datum represents a container within the container represented by the datum; and

the parent of a datum represents a container which contains the container represented by the datum.

20   77.   Computer-readable media embodying instructions executable by a computer to perform a method for tagging a datum in a hierarchical data set having a plurality of hierarchical levels and a plurality of hierarchical depths, the method comprising:

determining a hierarchical level of the datum;

determining a hierarchical depth of the datum; and

25   assigning a tag to the datum, comprising:

determining the immediate parent of the datum;

selecting a tag of the immediate parent of the datum, wherein the tag is a number having multiple digits each representing one of the hierarchical depths of the hierarchical data set;

30   selecting a digit of the selected tag that represents the hierarchical depth of the datum;

assigning a value to the selected digit, the value representing the hierarchical level of the datum.

78.	The media of claim 77, wherein assigning a value to the selected digit comprises:

determining the number of children of the immediate parent of the datum that have already been tagged;

incrementing the number of children to obtain an incremented number; and

setting the value of the selected digit to equal the value of the incremented number.

79.	The media of claim 77, wherein:

each datum represents a message;

the child of a datum represents a reply to the message represented by the datum; and

the parent of a datum represents a message, a reply to which is represented by the datum.

80.	The media of claim 77, wherein:

each datum represents a container;

the child of a datum represents a container within the container represented by the datum; and

the parent of a datum represents a container which contains the container represented by the datum.

81.	A unique tag for a datum in a hierarchical data set having a plurality of hierarchical levels and a plurality of hierarchical depths, comprising:

a number having a plurality of digits, each digit representing one of the hierarchical depths of the hierarchical data set; and wherein

the position of the least-significant non-zero digit represents the hierarchical depth of the datum;

the value of the least-significant non-zero digit represents the hierarchical level of the datum; and

the digits that are more significant than the least-significant non-zero digit represent parents of the datum.

82.   A memory for storing data for access by an application program being executed on a data processing system, comprising:

a data structure stored in the memory, the data structure comprising a hierarchical data set having a plurality of hierarchical levels and a plurality of hierarchical depths, the hierarchical data set comprising a unique tag for a datum comprising:

a number having a plurality of digits, each digit representing one of the hierarchical depths of the hierarchical data set; and wherein

the position of the least-significant non-zero digit represents the hierarchical depth of the datum;

the value of the least-significant non-zero digit represents the hierarchical level of the datum; and

the digits that are more significant than the least-significant non-zero digit represent parents of the datum.